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ABSTRACT

This publication contains a worker task list and supplementary information for occupations in the agriculture and natural resources cluster of occupations. The task list were generated through the DACUM (Developing a Curriculum) process and/or by analysis by a panel of experts. Tasks are listed in 10 categories: (1) performing investigative functions; (2) performing collection functions; (3) performing analytical functions; (4) performing monitoring functions; (5) managing waste; (6) preserving natural resources; (7) performing management functions; (8) resolving environmental problems; (9) performing communication functions; and (10) applying math and science concepts. Supplementary information includes information on worker traits and attitudes, knowledge, and basic skills and techniques. (KC)

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ED 406 534

OCCUPATIONAL ANALYSIS

AGRICULTURE/NATURAL RESOURCES
ENVIRONMENTAL TECHNICIAN TASK LIST

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Occupational Analysis

Agriculture/Natural Resources
Environmental Technician Task List

Developed by

Lord Fairfax Community College

Produced by

Virginia Vocational Curriculum and Resource Center
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FOR

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INTRODUCTION

Employers in today's high-tech workplace need workers with a variety of qualifications. To be successful in most technical fields, workers must

- master a number of specific tasks
- understand and be able to use related technical concepts and theories
- exhibit traits and attitudes that employers find desirable.

Students who wish to enter technical career fields must have instruction that enables them to gain these qualifications. This instruction may be provided in several ways, including secondary vocational programs and community college technical degree or certificate programs.

The first step in designing a technical curriculum is to analyze one or more occupations to determine

- the tasks and activities performed by competent workers on the job
- the skills and knowledge workers need to perform these tasks
- the general skills, knowledge, traits, and attitudes necessary for employment success.

Instruction that reflects this information will help students compete for jobs in their chosen field.

Tech prep projects throughout Virginia have based their programs on occupational analysis. The method depends on local needs and circumstances, but at a minimum each results in lists of tasks and technical and employability skills. Methods include

- **DACUM (Developing A CurriculUM):** A panel of workers describes a single occupation (e.g., police officer) by writing tasks on cards and placing them on the wall. Adding, revising, rearranging, or discarding cards results in a picture of an occupation. A modified DACUM uses prepared cards which are edited by the panel.
- **Panel of Experts:** Experts in an occupational field (e.g., criminal justice) validate an existing task list and discuss "big picture" issues. Experts may be workers, managers, human resource specialists, or other industry representatives capable of predicting trends in employment, designing career paths, and determining standards of worker performance.

Although occupational analysis is primarily a local effort, tech prep project sites can validate lists generated in a different part of the state to begin their curriculum development process. Both secondary and postsecondary program designers and teachers can use occupational task lists and other employer information to update existing instruction, validate course content, and generate workplace applications in academic classes.

The occupational analysis included in this guide is a part of the Agriculture/Natural Resources cluster of occupations. Career clusters are the organizational basis for tech prep, as students begin early to explore a group of similar occupations, narrowing choices along the educational path until

they are highly qualified for a career specialty. For example, a student may begin by exploring hospitality occupations, decide to concentrate on food service, and pursue a career in dietetics.

Further information about the task list published in this guide is available from

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For additional information related to tech prep, please call Darlene Blake, Tech Prep Coordinator, Virginia Community College System, at (804) 371-6582. To request curriculum development resources or assistance from the VVCRC, please call (804) 261-5075 or send e-mail to vvcrc@pen.k12.va.us.

ENVIRONMENTAL TECHNICIAN

Work Task List

Attitude

Knowledge

Basic Skills and Techniques

WORKER TASK LIST

A. PERFORMING INVESTIGATIVE FUNCTIONS
1. Comply with policy and procedure.
2. Gather data used to determine sources and methods of controlling and preventing environmental pollutions.
3. Conduct laboratory and field tests.
4. Conduct bacteriological or other tests.

B. PERFORMING COLLECTION FUNCTIONS
1. Collect metrological data.
2. Collect samples of various media.

C. PERFORMING ANALYTICAL FUNCTIONS
1. Prepare samples for testing.
2. Perform tests.
3. Record and organize data.
4. Prepare summaries and charts for review.
5. Generate reports.

D. PERFORMING MONITORING FUNCTIONS
1. Set up monitoring equipment.
2. Operate monitoring equipment.
3. Maintain monitoring equipment.

E. MANAGING WASTE
1. Recycle waste.
2. Reduce waste.
3. Convert waste.
4. Treat waste.
5. Dispose of chemicals.

F. PRESERVING NATURAL RESOURCES
1. Identify pollutants.
2. Identify potential sources of pollution.
3. Control pollution.
4. Identify soil erosion.
5. Control soil erosion.

G. PERFORMING MANAGEMENT FUNCTIONS

1. Train employees.
2. Supervise employees.
3. Implement policies/procedures.
4. Analyze/evaluate service contracts.
5. Enforce applicable regulations (safety, environmental, etc.).

H. RESOLVING ENVIRONMENTAL PROBLEMS

1. Consult with others.
2. Analyze environmental protection measures.
3. Identify policy and procedure.
4. Solve problems.

I. PERFORMING COMMUNICATION FUNCTIONS

1. Compose business letters.
2. Use appropriate etiquette.
3. Present information orally.
4. Write notes from meetings.
5. Make a non-technical presentation.
6. Create a sequence of operation.
7. Write product/service specifications.
8. Ask clear, concise questions.
9. Give clear, concise directions.
10. Write a technical report.
11. Make a technical presentation.
12. Debate alternative solutions.
13. Write a non-technical report.
14. Interpret and follow instructions.
15. Compose a memo/fax/e-mail.
16. Review company correspondence.
17. Use effective listening skills.
18. Develop/interpret a contract.
19. Manage work requests.
20. Compose business letters.
21. Interpret product/service specifications.
22. Use proper telephone communication.
23. Distinguish between formal and informal writing situations.
24. Interpret technical literature.
25. Write a news release.
26. Research new developments.
27. Conduct research (library, Internet, survey, etc.).
28. Adjust self to audience.
29. Negotiate effectively.

J. APPLYING MATH AND SCIENCE CONCEPTS

1. Perform basic addition, subtraction, multiplication, and division functions.
2. Calculate percentages.
3. Convert units of measurements.
4. Estimate costs.
5. Analyze machinery and computers.
6. Use deductive and inductive reasoning.
7. Perform basic geometric functions.
8. Prepare and implement a budget.

SUPPLEMENTARY INFORMATION

TRAITS AND ATTITUDES

Demonstrate self-confidence.
Work well under pressure.
Manage stress.
Be self-motivated.
Be a self-manager.
Utilize time management.
Communicate well with others.
Be a team player.
Be company oriented/show loyalty.
Be environmentally conscious.
Be ethical.
Be accurate.
Be consistent.
Be a self-learner.
Be adaptable to change.
Be open-minded.
Be safety conscious.

KNOWLEDGE

Applied Physics
Biology
Chemistry
Algebra (basic)
Electronics (basis)
Blue print reading
Statistics
Surveying (basic)
Business (basic)
Soil science
Environmental law

BASIC SKILLS AND TECHNIQUES

Charting/graphing
Resolving conflicts
Making decisions
Working independently
Working with difficult people
Demonstrating interpersonal skills
Using welding skills
Demonstrating organizational skills
Administering CPR/First Aid

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